UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,619	02/27/2004	Markus Goldstein	P04,0039	6493

26574   7590   07/23/2008
SCHIFF HARDIN, LLP
PATENT DEPARTMENT
6600 SEARS TOWER
CHICAGO, IL 60606-6473

EXAMINER
YEH, EUENG NAN

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
07/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

		Application No.	Applicant(s)
Office Action Summary		10/788,619	GOLDSTEIN ET AL.
		Examiner	Art Unit	
		EUENG-NAN YEH	2624	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>14 May 2008</u>.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-15</u> is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) <u>1-15</u> is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All   b) ☐ Some * c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 14,

2008 has been entered.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and
> process of making and using it, in such full, clear, concise, and exact terms as to enable any
> person skilled in the art to which it pertains, or with which it is most nearly connected, to make
> and use the same and shall set forth the best mode contemplated by the inventor of carrying out
> his invention.

3.   Claims 11-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to

comply with the written description requirement. Claim 11 contains subject matter

which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed,

had possession of the claimed invention. The new matter is: rotatable slice thickness.

Claims 12-15 are rejected by their dependency.

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

5.   Claims 1-10 and 11-15 are rejected under 35 U.S.C. 112, second paragraph, as
being indefinite for failing to particularly point out and distinctly claim the subject matter
which applicant regards as the invention.

   a) The pronoun "that" in "that specifies a slice thickness" of claim 1 (line 24) and
      claim 11 (line 18) is indefinite about it meaning for there is "a parameter" defines
      the accessibility then "a parameter" is very unlikely to be used as "specifies a
      slice thickness" again. For the purpose of this examination, the pronoun "that"
      will be interpolated as "another parameter".

   b) The "rotatable" in claim 11 is indefinite in meaning.

   c) Claim 15, line 2, "said parameter" is indefinite in meaning.

Claims 2-10 and 12-15 are rejected by their dependency.

                        Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to be
> patented and the prior art are such that the subject matter as a whole would have been obvious
> at the time the invention was made to a person having ordinary skill in the art to which said
> subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

7.   Claims 1-5, 10-11, 13, and15 are rejected under 35 U.S.C. 103(a) as being

unpatentable over the combination of Gropper et al. (US 2003/0005464 A1) and Slack

(US 2002/0068863 A1).

        Regarding claim 1, Gropper discloses a medical system comprising:

at least one imaging modality that acquires image data from a subject representing

examination images (as depicted in figure 1A, numeral 120: "…The image source 102,

also referred to as a modality, is a device that captures an image and/or image related

data. For example, the image source 102 can be a computed tomography ("CT")

imager, a magnetic resonance ("MR") imager, an ultrasound ("US") imager, an X-ray

imager, a computed radiography ("CR") imager, a digital radiography ("DR") imager, a

secondary capture ("SC") imager (e.g., a 3D reconstruction), a radiograph ("RG")

imager (e.g., radiograph captured by a film digitizer) and the like … If the image source

102 does not generate a digital image, a converter (not shown) is added to the output of

the image source ~~104~~ *102* to generate a digital image file for receipt by the importer 104"

in paragraph 33, line 11);

for each imaging modality, a computer workstation associated therewith that processes

the image data acquired by the associated imaging modality (as discussed above "… If

the image source 102 does not generate a digital image, a converter (not shown) is

added to the output of the image source ~~104~~ *102* to generate a digital image file for

receipt by the importer 104" in paragraph 33, line 21. It would have been obvious that

the needed converter can be a computer workstation associated with the imaging

modality to perform the digitizing process. See also "yet another embodiment, the

importer module 104 is included in the image source 102" in paragraph 58, line 12.

Thus, the importer can also be a part of the workstation which receives source image

#102);

a communication network in communication with said computer workstation that

transfers said examination images, after processing in the computer workstation, to

locations remote from said computer workstation (as depicted in figure 1A, numeral 122

is the communication network which connects between #104 and repository #108);

a storage device in communication with said communication network that stores said

examination images (as depicted in figure 1A, numeral 108);

at least one further workstation in communication with said communication network that

post-processes the examination images processed in said computer workstation (as

depicted in figure 1A, numeral 116 is another workstation: "The client device 116 is a

computing device that can communicate with the network 114. The client device 116

can be for example, a personal computer, a general workstation, a radiology

workstation ..." in paragraph 53, line 3);

a compression device in communication with said computer network that compresses

and organizes the image data representing said examination images and stores the

compressed data in packets, as packetized image data (as depicted in figure 3, numeral

306: "...image coding processor 306 transforms the medical images using the JPEG

2000 protocol. JPEG 2000 follows a similar progression to any transform technique for

image compression" in paragraph 72, line 6. Some of the salient features offered by the

JPEG2000 standard are: continuous tone (grayscale and color) and bi-level image

compression; progressive transmission by pixel accuracy and resolution; region of

interest coding. A color image may have several components (multi-component) from a

specified color space. For JPEG2000, all the compressed bitstreams (i.e. coded data)

from a specific tile, layer, resolution, component, and precinct are stored in a contiguous

segment called a packet),

with a parameter linked to the respective packets, defining permissible access to the

respective packets ("… In one embodiment, the file store provides security by encoding

the identifier of the file prior to indexing in the database store. In another embodiment,

the file store includes coded image files as well as coded lists of image files and

associated information (meta-data) about the image files. In another embodiment, the

file store provides security by encoding the identifier of the meta-data file prior to

indexing in the database store" in paragraph 13, line 4. "In another embodiment, the file

store includes meta-data serving some or all of the following elements: patient

identifiers that could be used to cross reference studies, security identifiers that could

be used to restrict access …" in paragraph 14, line 8);

a decompression device in communication with said communication network that

decompresses the packetized image data packet-by-packet dependent on a request

from said further workstation and dependent on said parameter, to cause multi-

component images to be generated at said further workstation with progressive

parameters (as depicted in figure 1A, numerals 116 and 117, "The client device 116

communicates over the network 114 to request a desired image file …" in paragraph 53,

line 13. See also figure 1B, numerals 116 and 117. "The repository 108 transmits the

requested image file or manifest to the client device 116 for display using the image

viewer 117. If an image is retrieved, the image viewer 117 displays the image …" in

paragraph 54, line 5. Thus, the decompression device #116 requests JPEG2000 data

file through network and the viewer #117 displays the result. For the parameter defines

image file accessibility discussed above "…the network server 113 *(figure 1B)* and/or

database 146 can act as the gatekeeper to determine if the user using the client device

116 to access identifying data for an image or manifest is authorized to do so …" in

paragraph 57, line 12. For JPEG2000, all the compressed bitstreams (i.e. coded data)

from a specific tile, layer, resolution, component, and precinct are stored in a contiguous

segment called a packet).

Gropper discloses a multi-component JPEG2000 data storage and retrieve

system. Gropper does not explicitly disclose the image data can have slice thickness

information.

Slack, in the same field of endeavor of medical image analysis ("enabling

physicians to select and display diagnostic images from image data acquired with

medical imaging systems" in paragraph 1, line 2), discloses "a method and system for

enabling large amounts of image data to be displayed such that the diagnostician can

easily locate a region of interest in the field of view of the acquired image data and

precisely specify a set of 2D diagnostic images that encompass the region of interest" in

paragraph 5, line 1. As depicted in figure 3, numeral 50 "Exam prescription subsystem

50 is responsible for determining how the patient exam data is acquired. Numerous

parameters are required to specify an acquisition including a sequence of slice

locations, slice thickness, field-of-view …These parameters can be entered explicitly by

the technologist or, more commonly, the parameters are defined by selecting a

particular scan protocol as is well known in the art. Subsystem 50 generates a scan

prescription and the prescription is transmitted to DAS 32 (FIG. 2)" in paragraph 17, line

1. "…data acquisition system (DAS) 32 in control mechanism 26 samples analog data

from detector elements 20 and converts the data to digital signals for subsequent

processing …" in paragraph 14, line 6. Thus, the slice thickness can be chosen as a

parameter variable to determine the medical image.

It would have been obvious at the time the invention was made to one of ordinary

skill in the art to incorporate the medical system Gropper made with slice thickness

parameter as taught by Slack such that "the diagnostician can easily locate a region of

interest in the field of view of the acquired image data and precisely specify a set of 2D

diagnostic images that encompass the region of interest" in paragraph 5, line 3.

Regarding claim 2, compression device generates further parameters

respectively linked with said packets, in addition to said parameter specifying slice

thickness, selected from the group consisting of a parameter specifying an image

resolution level, a parameter specifying an image quality level, a parameter specifying a

region of interest, and a parameter specifying a component index (as discussed in claim

1 that the slice thickness is one parameter taught by Slack. Furthermore, as discussed

in claim 1 for the compression device that the packet of JPEG2000 contains parameters

such as region of interest, progressive accuracy level, and progressive resolution level

etc.);

decompression device employs said parameters to generate said multi-component

images with at least one of a progressive image resolution, progressive image quality

levels, and consistent region of interest presentation, respectively (as discussed in claim

1 for the decompression device that the permissible access to the respective JPEG2000

packet linking to parameters such as progressive quality level, progressive resolution

level, and region of interest has been defined and verified before a multi-component

image data can be transmitted to the user. Only permissible packets can be check-out

and then displayed by the viewer).

Regarding claim 3, compression device generates supplementary information

and requests and transmits said supplementary information and requests to said further

workstation together with the compressed packetized image data ("The data received

by the importer 104 can include both image and non-image data (e.g., text, patient

information, image parameters and the like). The data can be transmitted and stored i)

in "files", ii) as streamed formats and/or iii) other non-file formats (e.g., DICOM and the

like)" in Gropper paragraph 33, line 3).

Regarding claim 4, said decompression device transmits a total quantity of data

in compressed state, with said parameters, to said further workstation (as discussed in

claim 1, the JPEG2000 parameters are transmitted to further workstation and the total

quantity of data "received by the importer 104 can include both image and non-image

data (e.g., text, patient information, image parameters and the like). The data can be

transmitted ..." in Gropper paragraph 33, line 3).

Regarding claim 5, said compression device transmits an entire file for an image

in compressed state to said further workstation ("The data can be transmitted and

stored i) in "files", ii) as streamed formats and/or iii) other non-file formats (e.g., DICOM

and the like). Accordingly, although the illustrative embodiments deals primarily with

image files, virtually any other data construct may be employed without deviating from

the scope of the invention" in Gropper paragraph 33, line 5).

Regarding claim 10, further workstation has user rights associated therewith (as

depicted in Gropper figure 1A, numeral 110 "The authorized user 110 is a user who is

authorized to have access to the received image ... The authorization process can be

any accepted authorization, for example, passwords, biometric authentication ..." in

paragraph 36, line 9), and

wherein said compression device transmits the compressed packetized image data, or

portions thereof, to said further workstation dependent on said user rights (discussed in

claim 1 for the file permissible accessibility).

Regarding claim 11, a method for operating a medical system architecture

comprising the steps of:

generating raw data of medical multi-component images using said imaging modality,

as said image data (discussed in claim 1 for the imaging modality);

compressing said raw data to generate compressed image data (discussed in claim 1

for the compression device);

organizing and storing said compressed image data in packets and linking a parameter

to the packets designating accessibility to the respective packets that specifies a slice

thickness progression (discussed in claim 1, storage device and compression device.

See also the claim 1 discussion about parameters and packet accessibility. Also the

concept of slice thickness is taught by Slack);

transferring the compressed image data to a decompression location (as depicted in

Gropper figure 1A, "user 110 wants to retrieve the image file, or manifest, the authorized

user 110 uses the client device 116. The client device 116 is a computing device that

can communicate with the network 114 ... The client device 116 communicates over the

network 114 to request a desired image file or patient study" in Gropper paragraph 53,

line 1. See also the claim 1 discussion about the selected parameters); and

at said decompression location, decompressing the compressed image data to form

multi-component images with selectively ~~rotatable~~ **variable** slice thickness dependent

on said parameters (discussed in claim 1 for the decompression device with parameters

and slice thickness).

Regarding claim 13, further workstation has user rights associated therewith, and

comprising analyzing said parameters to determine whether said decompressed image

data can be presented at said further workstation dependent on said user rights
(discussed in claim 1 about the file permissible accessibility).

Regarding claim 15, comprising linking further parameters, in addition to said
parameter that specifies a slice thickness progression, to the packets designating
accessibility to the respective packets, and selecting said further parameters from the
group consisting of a parameter defining progressive image resolution, a parameter
defining progressive image quality levels, a parameter identifying region of interest
consistency (as discussed in claim 1 that the slice thickness is one parameter taught by
Slack. Furthermore, as discussed in claim 1 for the compression device that the packet
of JPEG2000 contains parameters such as region of interest, progressive accuracy
level, and progressive resolution level etc).

8.   Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the
combination of Gropper and Slack as applied to claim 1 discussed above, and further in
view of Sirohey et al. (US 2002/0057844 A1).

Regarding claim 6, the Gropper and Slack combination teaches a medical
system transmits information to further workstation. The Gropper and Slack
combination does not explicitly teach that information is already in further workstation.

Sirohey, in the same field of endeavor of data management ("rapid transmission
of image files and selective handling based on the desired region of interest" in
paragraph 11, line 2), disclosed in figure 27 "process 400 also uses a variety of flags

and identifiers to facilitate tracking of the addressable sub-band data ... these flags and

identifiers may include flags to indicate whether the process 400 has already retrieved

and incorporated specific tessellated blocks, i.e., Sub-Bands(Z, X, Y), or has already

retrieved an entire resolution level into the locally stored image data. For example, a

Boolean flag may be used to indicate the presence or absence of particular block or

level ..." in paragraph 122, line 1.

It would have been obvious at the time the invention was made to one of ordinary

skill in the art to provide a medical system Gropper and Slack made with the capability

to identify information presence or absence in the further workstation such that only the

desired portion of image will be transmitted and viewed to improve the working

efficiency "Accordingly, a desired region of the image data can be identified and

individually handled for storage, transmission, retrieval, and display" in Sirohey

paragraph 12, line 7.

9.   Claims 7-9, 12, and 14 are rejected under 35 U.S.C. 103(a) as being

unpatentable over the combination of Gropper and Slack as applied to claim 1

discussed above, and further in view of Onno et al. (US 2003/0018750 A1).

Regarding claims 7 and 8, the Gropper and Slack combination teaches a medical

system transmits information to further workstation. The Gropper and Slack

combination does not explicitly teach render request and message after completion.

Onno, in the same field of endeavor of image processing to obtain ("providing a

new method and device for processing an encoded digital signal making it possible to

take into account the constraints and/or requirements specific to a user sending a request for obtaining a part of the digital signal" in paragraph 17, line 2), discloses that the user can not only define the area of interest but also "request the resolution ... of the chosen sub-image" in paragraph 197, line 1, and "the user may furthermore specify the desired quality in his request" in paragraph 200, line 1. Once the requested sub-image completed, it will be displayed in figure 12 with the quality bar or quantity bar discussed in paragraphs 318-320, i.e. after the selected image #220 completed and visualized, the quality bar rendering a request for the user to make a "selection by the mechanism 210 of a quantity of data chosen by the user will automatically generate a request addressed to the server ..." in Onno paragraph 323, line 1.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to include the medical system of the Gropper and Slack combination with message and render request capability as taught by Onno, so the user not only "will be able to obtain information about the resolutions or levels of quality available in the selected sub-image" in Onno paragraph 372, line 1, but also "respond rapidly to a request for obtaining a sub-image selected by the user by providing a response to the user" in Onno paragraph 374, line 2.

Regarding claim 9, decompression device generates and transmits a storage recommendation as said message (as depicted in Onno figure 5, step S10, user "will be able to obtain information about the resolutions or levels of quality available in the selected sub-image" in Onno paragraph 372, line 1).

Regarding claim 12, entering requests into said further workstation about specific parameters associated with said image data in said packets (discussed in claim 1 about specific parameters such as region of interest, resolution level, and quality level for each packet and the entering of request is discussed in claim 7).

Regarding claim 14, additionally transmitting supplementary information and requests from said decompression location to said further workstation ("the user will be supplied with at least one value indicative of a quantity of information data which has been determined during the step S5 *(figure 5)*" in Onno paragraph 312, line 3. In the mean time, "the system can supply the user with the value indicative of the quantity of information data corresponding to the lowest quality layer on the table of FIG. 9 mentioned above, which will enable him to take a decision with respect to the request initially formulated, and possibility to refine it" in Onno paragraph 313, line 1).

Response to Arguments

10.   *Summary of Applicant's Remark*:

"Applicants therefore respectfully submit that the Examiner's reliance on the use of a JPEG2000 data packet, as disclosed in the Gropper et al reference, does not encompass a parameter that allows presentation of the transferred image with a selected slice thickness" at response page 8, line 16.

Examiner's Response:

Applicant's argument is moot in view of the new grounds of rejection advanced

herein above. Specifically, the Slack (US 2002/0068863 A1) reference now teaches the

concept of slice thickness. Refer to the rejections above for further discussion.

11.   *Summary of Applicant's Remarks*:

"The computer workstation at the imaging modality is the workstation that

converts the "raw" image data into data formatted in the DICOM format. If the importer

module 104 in Gropper et al already is receiving data in the DICOM format, as

acknowledged by the Examiner, this means it is not the workstation at the imaging

modality" at response page 9, line 7.

Examiner's Response:

As discussed by Gropper: "… If the image source 102 does not generate a digital

image, a converter (not shown) is added to the output of the image source ~~104~~*102* to

generate a digital image file for receipt by the importer 104" in paragraph 33, line 21. It

would have been obvious that the needed converter can be a computer workstation

associated with the imaging modality to perform the digitizing process. Refer to the

rejections above for further discussion about the importer and the workstation.

Conclusion

12.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eueng-nan Yeh whose telephone number is 571-270-1586. The examiner can normally be reached on Monday-Friday 8AM-4:30PM EDT.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

        Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

                                            Eueng-nan Yeh
                                            Assistant Patent Examiner
                                            2624
                                            /E. Y./

/Vikkram Bali/

Supervisory Patent Examiner, Art Unit 2624